

DERIVADA POR TABLAS, PRODUCTO Y COCIENTE

$$1. y = \sqrt{3} \quad y' = 0$$

$$2. y = e \quad y' = 0 \quad 2,7182818 \dots = e$$

$$3. y = x \quad y' = 1$$

$$4. y = x^3 \quad y' = 3x^2$$

$$5. y = \frac{1}{x^3} = x^{-3} \quad y' = -3x^{-4}$$

$$6. y = \sqrt{x^5} = x^{\frac{5}{2}} \quad y' = \frac{5}{2}x^{\frac{3}{2}}$$

$$7. y = 2x + 1 \quad y' = 2$$

$$8. y = 5x^2 + 3x - 2 \quad y' = 10x + 3$$

$$9. y = 4 + 3x^2 - 2x + 3$$

$$y' = 12x^2 + 6x - 2$$

$$10. y = 4x^3 + \frac{3}{x^2} - 2\sqrt[5]{x^3} + 3x - 1$$

$$= 4x^3 + 3x^{-2} - 2x^{3/5} + 3x - 1$$

$$y' = 12x^2 - 6x^{-3} - \frac{6}{5}x^{-2/5} + 3$$

$$11. y = 4e^x + 2 \cos x - 3 \sin x - 5 \ln x$$

$$y' = 4e^x - 2 \sin x - 3 \cos x - \frac{5}{x}$$

$$12. y = 4 \tan x + 2 \sin^{-1} x + 3 \tan^{-1} x + 2$$

$$y' = 4 \sec^2 x + 2 \frac{1}{\sqrt{1-x^2}} + 3 \frac{1}{1+x^2}$$

Derivada de un producto: $(uv)' = u'v + uv'$

$$y = x^2 \ln x \quad y' = 2x \ln x + x^2 \left(\frac{1}{x} \right) = 2x \ln x + x$$

$$y = (2x + 1) \sin x \quad y' = 2 \sin x + (2x + 1) \cos x$$

$$y = e^x \cos x \quad y' = e^x \cos x - e^x \text{sen } x = e^x(\cos x - \text{sen } x)$$

$$y = e^x(x^2 + x - 1) \quad y' = e^x(x^2 + x - 1) + e^x(2x + 1) \\ = e^x(x^2 + 3x)$$

División de funciones $\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$

$$\left(\frac{3x + 4}{5x + 8}\right)' = \frac{3(5x + 8) - (3x + 4)5}{(5x + 8)^2} = \frac{4}{(5x + 8)^2}$$

$$(\tan x)' = \left(\frac{\sin x}{\cos x}\right)' = \frac{\cos x \cos x + \sin x \sin x}{\cos^2 x} = \frac{\cos^2 x + \sin^2 x}{\cos^2 x}$$

$$= \frac{1}{\cos^2 x} = \sec^2 x$$